NASA Procedural Requirements

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COMPLIANCE IS MANDATORY FOR NASA EMPLOYEES

Environmental Compliance and Restoration Program (Revalidated on April 5, 2016 with Change 1)

Responsible Office: Environmental Management Division

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Change #	Date	Description
1	4/5/2016	Revalidated directive to comply with revision of NPR 1400. Made administrative and grammar changes. Changed the word "Figure" to "Table", and renumbered the Tables.

Preface

P.1 Purpose

1.1 This NASA Procedural Requirements (NPR) describes the responsibilities and requirements by which NASA will formulate and execute the Environmental Compliance and Restoration (ECR) Program and projects and NASA-managed remediation projects conducted at NASA-administered property.

1.2 By policy, NASA is committed to planning, developing, and implementing programs and projects to minimize the release of hazardous substances into the environment, to restore impacted natural resources, and to maintain environmental compliance in concert with the Agency's mission by:

a. Working with stakeholders, such as environmental groups, tribes, State and local government agencies, and industry to identify common goals concerning cleanup of hazardous substances and restoration of natural resources.

b. Reducing the Agency's unfunded environmental liability.

c. Advancing efforts to reduce environmentally driven risks to NASA's mission.

d. Ensuring a proactive approach to environmental management and compliance through the tracking and early identification of regulatory changes, emerging technologies, and initiatives.

e. Maintaining effective communication with policy and regulatory authorities.

f. Advancing partnerships and environmental stewardship.

g. Ensuring environmental statutory and regulatory compliance.

1.3 In this NPR, "shall" denotes a mandatory action, "may" or "can" denotes discretionary privilege or permission, "should" denotes a good practice and is recommended, but not required, "will" denotes expected outcome, and "are/is" denotes descriptive material.

1.4 ECR guidance, including analyses, processes, methods, templates, and practices will describe how the "shall" and "will" statements may be met.

P.2 Applicability

2.1 This NPR applies to NASA Headquarters and NASA Centers, including Component Facilities. This NPR applies to contractors including the Jet Propulsion Laboratory (JPL), a Federally Funded Research and Development Center (FFRDC), grant recipients, and parties to other agreements to the extent specified in their contract, grant, or agreement.

P.3 Authority

a. The Budget and Accounting Procedures Act of 1950, Title 31 U.S.C. § 3513(a).

b. The National Aeronautics and Space Act, as amended, Title 51 U.S.C. § 20113(a).

c. Policy on Environmental Quality and Control, 14 C.F.R. 1216.1.

d. NASA Policy Directive (NPD) 1000.0, NASA Governance and Strategic Management Handbook.

e. NPD 1000.3, The NASA Organization.

f. NPD 1001.0, 2011 NASA Strategic Plan.

g. NPD 8500.1, NASA Environmental Management.

P.4 Applicable Documents and Forms

a. Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended, Title 42 U.S.C. §§ 9601 - 9675.

b. Solid Waste Disposal, as amended, Title 42 §§ 6901 - 6992k, commonly referred to as the Resource Conservation and Recovery Act (RCRA).

c. Toxic Substance Control Act (TSCA), as amended, Title15 U.S.C. § 2601 et seq.

d. State or local cleanup laws to the extent Congress has made such laws applicable to Federal facilities through a waiver of sovereign immunity in a Federal statute (e.g., CERCLA

Section 120(a)(4), (Title 42 U.S.C. 9620(a)(4)), or Safe Drinking Water Act, Section 6001 (Title 42 U.S.C. 6961).

e. NPR 1441.1, NASA Records Retention Schedules.

f. NPR 4300.1, NASA Personal Property Disposal Procedure Requirements.

g. NPR 7120.6, Lessons Learned Process.

h. NPR 7120.7, NASA Information Technology and Institutional Infrastructure Program and Project Management Requirements.

i. NPR 8000.4, Agency Risk Management Procedural Requirements.

j. NPR 8621.1, NASA Procedural Requirements for Mishap and Close Call Reporting, Investigating, and Recordkeeping w/Change 5 (03/15/2010).

k. NPR 8715.1, NASA Occupational Safety and Health Programs w/Change 3 (02/13/06).

l. NPR 8715.3, NASA General Safety Program Requirements.

m. NPR 8800.15, Real Estate Management Program.

n. NPR 8820.2, Facility Project Requirements.

o. NPR 9260.1, Revenue, Unfunded Liabilities, and other Liabilities.

P.5 Measurement/Verification

Compliance with this NPR is verified by submission of required documents to NASA officials at approval points identified in this document.

P.6 Cancellation

NPR 8590.1, NASA Environmental Compliance and Restoration (ECR) Program, dated June 14, 2007.

Chapter 1. Introduction

1.1 Background

1.1.1 This NASA Procedural Requirements (NPR) describes the responsibilities and requirements by which NASA will formulate and execute the Environmental Compliance and Restoration (ECR) Program and projects and NASA-managed remediation projects conducted at NASA-administered property.

1.1.2 By policy, NASA is committed to planning, developing, and implementing programs and projects to minimize the release of hazardous substances into the environment, to restore impacted natural resources, and to maintain environmental compliance in concert with the Agency's mission by:

1.1.2.1 Restoration projects include activities required under Federal, state, or local laws; or other legally enforceable agreements (e.g., court-mandates and those legally required by negotiated agreements) at NASA-owned or NASA-operated property as further clarified in paragraph 4.1.1 of this NPR.

1.1.2.2 Environmental Compliance/Functional Leadership (ECFL) projects that are not part of routine environmental compliance activities and respond to changing environmental laws, regulations, or requirements as further clarified in paragraph 5.1.1 of this NPR.

1.1.3 ECR funds are not available for claims against NASA for third-party damages resulting from environmental contamination.

Chapter 2. Environmental Compliance and Restoration Program and Project Management Roles and Responsibilities

2.1 Roles and Responsibilities

2.1.1 Responsibilities specific to a position title may be delegated by the responsible person. The roles and responsibilities of senior management are defined in NPD 1000.0, NASA Governance and Strategic Management Handbook; NPD 1000.3, The NASA Organization; and NPD 8500.1, NASA Environmental Management. The following are key roles and responsibilities for establishing, assigning, and maintaining ECR Program requirements and managing ECR projects:

a. The Assistant Administrator for the Office of Strategic Infrastructure (OSI) is the ECR Program decision authority and shall be responsible for:

(1) Approving ECR policies to ensure that the ECR Program is in alignment with NASA's vision, mission, and strategic goals.

(2) Approving the final Planning, Programming, Budgeting, and Execution (PPBE) submission to the Office of the Chief Financial Officer (OCFO).

(3) Approving agreements with, and actions regarding, a Potentially Responsible Party (PRP).

(4) Approving and signing Memoranda of Agreement (MOA) between Centers and OSI related to Principal Center Initiatives.

(5) Concurring on the final funding selection of ECR projects submitted by the Director of EMD.

(6) Concurring on submitted ECR Program reviews.

(7) Advocating for sufficient resources to meet ECR Program requirements.

(8) Approving orders (e.g. Consent Orders), other external agreements, or responses to legal actions taken against NASA related to the ECR Program.

(9) Implementing mitigation strategies for notices of violation from regulators, operating permits, or other activities that impact the ECR budget.

b. The Agency's General Counsel shall be responsible for evaluation of and concurrence with external agreements or orders related to ECR projects.

c. The Director of EMD shall be responsible for:

(1) Ensuring that NASA's ECR assets, contracted services, grants, and agreements are acquired and managed in a manner consistent with Federal policies, procedures, and legislation.

(2) Providing policy, guidance, and direction for ECR Program cost estimates.

(3) Approving selected remedial actions for restoration projects.

(4) Approving task plans related to Principal Center Initiatives.

(5) Approving management, control, prioritization, cost estimation, and corrective action processes for ECR projects and activities developed by the ECR Program Manager.

(6) Approving project plans for Headquarters Initiatives.

(7) Approving closeout of Headquarters Initiatives.

(8) Concurring on compliance agreements with regulatory agencies that result in committing ECR funds.

(9) Concurring with Center Directors on Project Managers named for Principal Center Initiatives.

(10) Reviewing PRP analyses and agreements.

(11) Managing risks in accordance with NPR 8000.4, Agency Risk Management Procedural Requirements, and establishing controls for the ECR Program.

(12) Establishing milestones and metrics for evaluating the ECR Program (e.g., completeness and timeliness of Center/Facility Component responses to EMD data calls).

(13) Reporting established ECR Program milestones and metrics to the Assistant Administrator for OSI as required.

(14) Preparing and submitting the final PPBE submission, as approved by the Assistant Administrator for OSI, to the NASA Environmental Management Panel and OCFO.

(15) Appointing the EMD ECR Program Manager, EMD Principal Center Sponsors, Center liaisons, and other managers for EMD-based projects and activities.

d. The ECR Program Manager shall be responsible for:

(1) Supporting ECR Program compliance with applicable Federal, state, and local laws and regulations, and Executive Orders at Centers and Component Facilities.

(2) Implementing the ECR Program according to this NPR and applicable NPDs, NPRs, and other Agency policy and procedural documents.

(3) Coordinating the ECR Program with OSI, EMD, the Environmental Management Panel, Center Directors, Center Environmental Managers, Project Managers, and stakeholders.

(4) Approving project plans for restoration projects, ECFL studies, and Capital Compliance projects.

(5) Prioritizing ECR projects.

(6) Providing guidance describing the analyses, processes, methods, templates, and practices by which the "shall" and "will" statements in this NPR may be met.

(7) Providing leadership, program advice, and technical assistance to Center Environmental Managers.

e. The Center Director shall be responsible for:

(1) Signing external agreements or orders for ECR projects after approval by the Assistant Administrator for OSI.

(2) Ensuring the availability of appropriate Center resources to execute the ECR projects.

(3) Ensuring that applicable Office of the Chief Health and Medical Officer (OCHMO) and the Office of Safety and Mission Assurance (OSMA) program requirements are implemented in support of ECR projects.

(4) Approving and signing MOAs between Centers and OSI related to Principal Center Initiatives.

(5) Naming Project Managers for Principal Center Initiatives.

f. The Center Chief Counsel shall be responsible for:

(1) Reviewing PRP analyses performed at the Centers and Component Facilities.

(2) Reviewing Center and Component Facility correspondence with PRPs.

(3) Coordinating PRP negotiations with the Agency's General Counsel.

(4) Reviewing communications with regulatory agencies on ECR-related regulatory actions (e.g., notices of violations, Unilateral Administrative Orders) and coordinating responses with the Agency's General Counsel.

(5) Reviewing agreements or orders related to ECR activities.

g. The Center Environmental Manager shall be responsible for:

(1) Reporting receipt of ECR-related regulatory actions to the assigned Center Liaison (e.g., notices of violations, Unilateral Administrative Orders) and Center Chief Counsel.

(2) Coordinating ECR projects and activities within the Center and Component Facility organization.

(3) Naming Center Project Managers to specific projects.

(4) Executing projects in accordance with approved project plans and EMD and OSI direction.

(5) Reviewing project progress to ensure compliance with NASA policies and applicable Federal, state, and local laws and regulations.

(6) Coordinating with the OCHMO and OSMA to ensure project safety in accordance with NPR 8715.1, NASA Occupational Safety and Health Programs; NPR 8715.3, NASA General Safety Program Requirements; and NPR 8621.1, NASA Procedural Requirements for Mishap and Close Call Reporting, Investigating, and Recordkeeping.

(7) Ensuring the technical integrity, performance, and success of projects.

(8) Retaining documentation for all project submittals and records for management review in accordance with NPR 1441.1 NASA Records Retention Schedules.

(9) Coordinating with Center Facility and Master Planning Offices regarding potential land use controls required for ECR Restoration Projects.

h. The EMD Center Liaison shall be responsible for:

(1) Coordinating environmental projects and activities for their assigned Center.

(2) Maintaining contact with Center Environmental Managers on environmental issues.

(3) Tracking environmental compliance issues at Centers.

(4) Recommending ECFL studies and Capital Compliance projects for approval.

(5) Reviewing project plans for ECFL studies and Capital Compliance projects.

i. The EMD Principal Center Sponsor shall be responsible for:

(1) Reviewing annual task plans for Principal Center Initiatives.

(2) Monitoring and reporting to the Director of EMD on implementation of the annual task plan.

(3) Coordinating MOA requirements for Principal Center activities with the Center Project Managers.

Chapter 3. Environmental Compliance and Restoration Program Management Requirements

3.1 Overview

3.1.1 The ECR Program provides direction, oversight, analysis, management, control, and funding of ECR projects and activities.

3.2 Approvals and Authorization

3.2.1 The ECR Program Manager shall:

a. Provide guidance on criteria for ECR Project eligibility.

b. Approve restoration projects and ECFL projects.

c. Approve Interim Actions.

d. Approve cost estimates for restoration projects and ECFL projects.

e. Approve transfer of funds between projects.

f. Approve clean-up levels and analysis of alternatives for restoration projects.

g. Approve site closure for restoration projects, including verifying and validating regulatory agency approval.

h. Approve closeout of restoration projects, ECFL studies, and Capital Compliance projects.

3.3 Environmental Compliance and Restoration Program and Project Prioritization

3.3.1 The ECR Program Manager shall:

a. Establish a prioritization process for funding, management, and control of the ECR Program and projects in accordance with NPR 8000.4, Agency Risk Management Procedural Requirements.

b. Submit the process to the Director of EMD for approval.

c. Ensure that the approved prioritization process is followed.

3.4 Cost Estimation and Funding

3.4.1 The ECR Program Manager shall:

a. Establish a process for preparing project cost estimates.

(1) Submit the process to the Director of EMD for approval.

(2) Ensure that the approved cost estimation process is followed.

(3) Ensure that training on the approved process is available for cost estimators.

b. Initiate data calls to Center Environmental Managers for project cost estimates.

c. Assist the Office of the Chief Financial Officer to summarize contingent and unfunded liability estimates in accordance with NPR 9260.1, Revenue, Unfunded Liabilities, and other Liabilities.

d. Compile and submit the following to the Director of EMD:

(1) Project cost estimates from Centers and Component Facilities.

(2) Costs for ECR Program activities (e.g., Environmental Functional Reviews (EFRs), support of the NASA Environmental Tracking System (NETS)).

3.5 Monitoring, Reviewing, and Reporting

3.5.1 The ECR Program Manager shall:

a. Monitor ECR Program implementation at the Centers and Component Facilities.

b. Review PRP agreements and submit them to the Director of EMD.

c. Review progress reports submitted by Center Environmental Managers, and prepare a summary for the Director of EMD as requested.

3.6 Corrective Action

3.6.1 The ECR Program Manager shall:

a. Establish a corrective action process for milestones and metrics that are not met.

b. Submit the process to the Director of EMD for approval.

c. Ensure that the approved process is followed.

Chapter 4. Restoration Project Requirements

4.1 Introduction

4.1.1 Restoration projects include investigation activities such as sampling, analysis, monitoring, modeling, and PRP studies related to contamination from NASA operations. Restoration projects may include containment, cleanup, environmental closures (including tanks, landfills, and other environmentally-regulated facilities or units), attenuation, land-use controls, oversight, land parcel purchase, long-term operations and maintenance (O&M), provision of alternate drinking or potable water supplies, and evaluation of remedial alternatives.

4.1.2 The restoration project life cycle is divided into phases, as shown in Table 4-1.

Table 4-1 Restoration Project Life Cycle

NPR Section	4.3 Project Planning	4.4 Project Implementation				4.5 Project Closeout
Restoration Life Cycle Phases	Project Identification and Preliminary Assessment	Investigation and Studies and Analysis of Alternatives	Design	Remedial Action	Operations, Maintenance, and Monitoring	Closure
Approval Points	(1) (2)	(3)			(4) (5)	(6)
Phase Elements	Project Definition PRP Analysis (1) Project Plan Project Prioritization Funding Request / Project Approval (2) Preliminary Assessment / Site Investigation RCRA Facility Assessment	Remedial Investigation / Feasibility Study RCRA Facility Investigation / Corrective Measures Study Analysis of Alternatives Remedy Selection (3) Record of Decision / Statement of Basis	Preliminary Design Remedial Design Corrective Measures Design	Remedial Action Corrective Measures Implementation	Operations and Maintenance Monitoring RCRA Facility Operations and Maintenance Decommissioning O&M Five-year review (4) Completion of Remedy (5)	Surveillance and Long-Term Monitoring is Complete (6) Closure
	(7) Interim Removal Actions can occur in any life-cycle phase (NPR Section 4.2)					

4.1.3 Project approval points for the restoration project life-cycle phases are summarized in Table 4-2, which describes the approval interface between EMD and the ECR Project Manager.

Table 4-2 Restoration Project Life-Cycle Approvals

Life-Cycle Phase	Approval Point	Submittal	Approval Authority
Project Identification and Preliminary Assessment	(1) PRP Analysis	PRP Report	Director of EMD
	(2) Project Approval	Project Plan	ECR Program Manager
Investigation and Studies and Analysis of Alternatives	(3) Remedy Selection	Remedy Selection Report	Director of EMD
Operations Maintenance and Monitoring	(4) Five-Year Review	Five-Year Review Report	ECR Program Manager
	(5) Completion of Remedy	Remedy Completion Report	ECR Program Manager
Closure	(6) Surveillance and Long-Term Monitoring is Complete	Final Surveillance and Long-Term Monitoring report	ECR Program Manager
Time-Critical Emergency Interim Action	(7) Prior to Action	Notification	ECR Program Manager
Other Interim Action	(7) Prior to Action	Project Plan	ECR Program Manager

4.2 Interim Action

4.2.1 Interim Actions occur at any point in a project life cycle, based upon risk assessment or cost effectiveness.

4.2.2 The Center Environmental Manager shall provide immediate notification to the ECR Program Manager of any Time-Critical Emergency Interim Action, and document the notification.

4.3 Project Planning

4.3.1 The Center Environmental Manager shall:

a. Submit a project for approval.

b. Name a Project Manager (except at JPL (an FFRDC), where the Head of the NASA Management Office (NMO) names the Project Manager) to the restoration project.

c. Notify regulatory agencies if required by applicable laws and regulations.

d. Maintain the official repository for all electronic and hardcopy records to create the administrative record documenting the cleanup and to support restoration decisions and cost estimates in accordance with NPR 1441.1, NASA Records Retention Schedules..

e. In consultation with the Center Chief Counsel's Office, determine whether a PRP analysis is required. If NASA is clearly the only party responsible for contamination, a PRP analysis is not required.

f. Conduct a PRP analysis if:

(1) The project site is included on a Federal or state priority list.

(2) Contamination may be caused by activities of former site owners or operators other than NASA or the National Advisory Committee for Aeronautics.

(3) Contamination occurs on property jointly owned or controlled by NASA and another entity.

(4) Contamination is migrating onsite from a neighboring property.

g. Document the results of the PRP analysis and submit it to the ECR Program Manager and the Director of EMD for review.

h. Consult with the Center Chief Counsel's Office to determine whether a PRP agreements is feasible. If feasible, negotiate PRP agreement with identified PRPs and consult with the Center Chief Counsel and the Director of EMD throughout the negotiations.

i. Submit PRP agreements to the Director of EMD for review and to the Assistant Administrator for OSI for approval.

j. Prepare a project plan to ensure that project activities, procedures, and practices support the Agency's mission, commitment to compliance with applicable regulations, and protection of human health and the environment, including:

(1) A project description, including the purpose, need and the regulatory authority.

(2) A project cost estimate prepared according to the approved cost-estimation process.

(3) A baseline schedule.

(4) A description of project risk management.

(5) A description of potential occupational safety and health risks.

(6) A description of approval points, approval authorities, and the method for communicating and receiving authorizations in the project life cycle, which includes, at a minimum, those identified in Table 4-2.

(7) Ensure that project closure activities involving deed recordation and environmental covenants follow NPR 8800.15, Real Estate Management Program.

k. Submit the project plan to the ECR Program Manager.

l. Prioritize the project in accordance with the approved prioritization process and submit the results to the ECR Program Manager.

4.4 Project Implementation

4.4.1 The Center Environmental Manager shall:

a. Implement the project plan.

b. Obtain required approvals at the approval points identified in the project plan.

c. Obtain approval of remedy selection from the Director of EMD.

d. Support the project review at the end of each life-cycle phase, as described in Table 4-1.

e. Update the project plan annually and at the end of each life-cycle phase.

4.5 Project Closeout

4.5.1 The Center Environmental Manager shall:

a. Obtain approval for project closeout from the ECR Program Manager.

b. Dispose of project assets safely and in accordance with applicable laws and regulations.

c. Prepare and document the system decommissioning and disposal requirements and plans in accordance with NPR 4300.1, NASA Personal Property Disposal Procedural Requirements.

d. Document lessons learned in accordance with NPR 7120.6, Lessons Learned Process.

e. Archive records and information in accordance with NPR 1441.1, NASA Records Retention Schedules.

f. De-obligate unused funds and close the project.

Chapter 5. Environmental Compliance/Functional Leadership Project Requirements

5.1 Introduction

5.1.1 ECFL projects help NASA adapt to changing environmental regulations or requirements. There are four ECFL project categories:

a. Capital Compliance Projects—Center-initiated projects to support Agency sustainability efforts or for facility improvements in response to new or changing environmental regulatory requirements (e.g., boiler retrofits, generators, diesel equipment, or wastewater treatment systems required to meet revised regulatory standards). A Capital Compliance project eligible for ECR funding:

(1) Does not include changes or improvements caused by a lack of maintenance or equipment reaching the end of its design life.

(2) Is not initiated by a change in mission wherein the change is the only driver for a change in regulatory requirements.

(3) Does not include abatement or removal of polychlorinated biphenyl (PCB) materials, asbestos, or lead-based paint as part of construction or demolition.

(4) Has an estimated $1,000,000 minimum project cost.

(5) Must comply with the requirements of NPR 8820.2, Facility Project Requirements.

b. Headquarters Initiatives—Agency-wide projects and activities initiated and managed by EMD. A Headquarters Initiative eligible for ECR funding includes:

(1) Studies of changes in legal and other requirements and regulations to determine applicability.

(2) EMD information management systems (e.g., NETS, cost estimating software).

(3) Subscriptions for environmental regulatory databases.

(4) Environmental Functional Reviews.

(5) Support activities for EMD or the ECR Program (e.g., workshops, logistics, planning, and program/process analysis and improvement).

c. ECFL Studies—Projects initiated at a Center and Component Facility that have a potential benefit of addressing Agency risks, realizing opportunities (e.g., identifying environmental or energy performance improvements), or establishing external partnerships. ECFL studies include review of changes in regulations to determine applicability to Centers and Component Facilities, and analysis of specific problems to determine a course of action. An ECFL study eligible for ECR funding:

(1) Does not involve capital improvements.

(2) Does not include plans currently required for compliance (e.g., spill prevention control and countermeasures plans, storm water pollution prevention plans) or other routine operational environmental compliance costs.

d. Principal Center Initiatives—Ongoing Agency-wide activities and projects that are initiated by EMD and implemented by Centers. Principal Center Initiatives require a formal MOA between the implementing Center and OSI and development of annual task plans.

5.2 Environmental Compliance/Functional Leadership Capital Compliance Project

5.2.1 Environmental Compliance/Functional Leadership (ECFL) Capital Compliance project life cycles are divided into phases, as shown in Table 5-1.

Table 5-1 ECFL Capital Compliance Project Life-Cycle

NPR Section	5.2.2 Project Planning		5.2.2 Project Implementation	5.2.2 Project Closeout
ECFL Project Life-Cycle Phases	Planning	Design	Implementation	Closure
Approval Points	(1)	(2)	(3)	(4)
Capital Compliance Project	Project Plan	Final Project Design and Procurement Environmental Component of Design Documents (2)	Construction and Project Oversight Final Report (3)	As-Built Drawings Notification of Completion (4)

5.2.2 Project approval points for the ECFL Capital Compliance project life-cycle phases are summarized in Table 5-2, which describes the approval interface between EMD and the ECR Project Manager.

Table 5-2 ECFL Capital Compliance Project Life-Cycle Approvals

ECFL Project	Life-Cycle Phase	Approval Point	Approval Authority
Capital Compliance Project	Planning	(1) Project Plan	ECR Program Manager through Center Liaison
	Design	(2) Environmental Component of Design Documents	Center Environmental Manager
	Implementation	(3) Final Report	Center Liaison
	Closure	(4) Notification of Completion	ECR Program Manager through Center Liaison

5.2.3 The Center Environmental Manager shall:

a. Identify projects that are eligible for ECR Program funds.

b. Prioritize the project in accordance with the approved prioritization process.

c. Submit the project for approval.

d. Name a Project Manager.

e. Prepare a project plan including:

(1) A project description, including the purpose and need.

(2) A project cost estimate prepared according to the approved estimation process.

(3) A baseline schedule.

A description of project risk management including a:

(4) identification of potential occupational safety and health risks.

(5) description of approval points as identified in Table 5-2.

(6) plan for monitoring project progress, including a definition of performance metrics, the frequency of monitoring and measuring, and a process for corrective actions.

(7) A description of the review and reporting cycle, reporting format, and reporting frequency, including at a minimum quarterly reports.

f. Submit the project plan to the approving authority described in Table 5-2.

g. Implement the project plan.

h. Coordinate the construction process with the Construction of Facilities Project Manager, and other external organizations, to ensure that the project meets environmental permitting and regulatory requirements.

i. Ensure that the Capital Compliance project for infrastructure improvements follows NPR 8820.2, Facility Project Requirements as a Non-Construction of Facilities project and follows NPR 8800.15, Real Estate Management Program.

j. Submit documentation for improvements and modifications to NASA's real property, as required by NPR 8800.15, Real Estate Management Program, to ensure that NASA properly records the value of its real property.

k. Submit documentation required by NPR 8820.2, Facility Project Requirements, to the Director of EMD and the Facilities Engineering and Real Property Division.

l. Archive records and information in accordance with NPR 1441.1, NASA Records Retention Schedules.

m. Document lessons learned in accordance with NPR 7120.6, Lessons Learned Process.

n. Obtain approval from the ECR Program Manager to close the project.

o. Deobligate unused funds and close the project.

5.3 Headquarters Initiative, Environmental Compliance/Functional Leadership Study, and Principal Center Initiative

5.3.1 ECFL study, Headquarters Initiative, and Principal Center Initiative project life cycles are divided into phases.

Table 5-3 Headquarters Initiative, ECFL Study, and Principal Center Initiative Project Life-Cycle

NPR Section	5.3.3 Project Planning		5.3.4 Project Implementation	5.3.5 Project Closeout
ECFL Project Life-Cycle Phases	Planning	Design	Implementation	Closeout
Approval Points		(1) (2)	(3)	(4)
Headquarters Initiative	Project Definition Project Plan (1)		Implement Project Plan Draft Report (3)	Final Report (4)
ECFL Study	Definition and Study Design Project Plan (1)		Collect and Study Data Draft Report (3)	Final Report (4)
Principal Center Initiative	Memorandum of Agreement (1) Annual Task Plan (2)		Follow Annual Task Plan Annual Report (3)	Final Report (4)

5.3.2 Project approval points for the Headquarters Initiative, ECFL study, and Principal Center Initiative project life-cycle phases outline the approval interface between EMD and the Project Manager.

Table 5-4Headquarters Initiative, ECFL Study, and Principal Center Initiative Project Life-Cycle Approvals

ECFL Project	Life-Cycle Phase	Approval Point	Approval Authority
Headquarters Initiative	Planning/Design	(1) Project Plan	Director of EMD
	Implementation	(3) Draft Report	Director of EMD
	Closeout	(4) Final Report	ECR Program Manager
ECFL Study	Planning/Design	(1) Project Plan	ECR Program Manager through Center Liaison
	Implementation	(3) Draft Report	Center Liaison
	Closeout	(4) Final Report	ECR Program Manager through Center Liaison
Principal Center Initiative	Planning/Design	(1) MOA	Center Director and Assistant Administrator for OSI
		(2) Annual Task Plan	Director of EMD through Principal Center Sponsor
	Implementation	(3) Annual Task Plan Report	Director of EMD through Principal Center Sponsor
	Closeout	(4) Final Report	Director of EMD through Principal Center Sponsor

5.3.3 Project Planning

a. The Director of EMD shall:

(1) Identify potential Headquarters Initiatives or Principal Center Initiatives that are eligible for ECR Program funds.

(2) Prioritize projects in accordance with the approved prioritization process and submit the results to the ECR Program Manager.

(3) Approve the project.

(4) Name an EMD Project Manager for Headquarters Initiatives.

(5) Name a Principal Center Sponsor for Principal Center Initiatives.

b. The Center Environmental Manager shall:

(1) Identify ECFL studies that are eligible for ECR Program funds.

(2) Prioritize projects in accordance with the approved prioritization process.

(3) Submit the project to the ECR Program Manager for approval.

(4) Name a Project Manager.

c. The EMD Principal Center Sponsor shall:

(1) Prepare an MOA describing a proposed Principal Center Initiative and qualifications of the Project Manager.

(2) Submit the MOA for review and approval by the Center Director and the Assistant Administrator for OSI.

(3) Review the annual task plan and advocate for funding.

(4) Monitor the MOA and coordinate renewal.

d. For Principal Center Initiatives, the Center Director shall name a Project Manager with concurrence from the Director of EMD.

e. ECFL Project Managers shall prepare a project plan for ECFL studies and Headquarters Initiatives or a task plan for Principal Center Initiatives to ensure that project support the NASA mission, commitment to compliance with applicable regulations, and protection of human health and the environment, including:

(1) A project description, including the purpose and need.

(2) A project cost estimate prepared according to the approved cost estimation process.

(3) A baseline schedule.

(4) A description of project risk management including potential occupational safety and health risks.

(5) A description of approval points, approval authorities, and the method for communicating and receiving authorizations in the project life cycle, as identified in Table 5-4.

(6) A plan for monitoring project progress, including a definition of performance metrics, the frequency of monitoring and measuring, and a process for corrective actions.

(7) A description of the review and reporting cycle, reporting format, and reporting frequency, including, at a minimum, quarterly reports.

f. The ECFL Project Manager shall submit the project plan to the approving authority described in Table 5-4.

5.3.4 Project Implementation

a. The Center Environmental Manager shall implement an ECFL study, according to the approved project plan.

b. The EMD Project Manager shall implement a Headquarters Initiative, according to the approved project plan.

c. For a Principal Center Initiative, the Principal Center Sponsor shall:

(1) Monitor performance against milestones and metrics identified in the annual task plan and, if necessary, initiate corrective actions.

(2) Review and approve Principal Center submittals.

(3) Report quarterly to the Director of EMD on annual task plan progress.

d. The ECFL Project Manager shall:

(1) Plan and support the project review at the end of each life-cycle phase described in Table 5-3.

(2) Update the project plan or task plan annually and at the end of each life-cycle phase.

5.3.5 Project Closeout

e. The Center Environmental Manager shall:

(1) Obtain approval from the ECR Program Manager to close an ECFL study.

(2) Close the project.

f. The ECR Program Manager shall close Headquarters Initiatives.

g. The Director of EMD shall close Principal Center Initiatives.

h. Project closeout activities include:

(1) Archiving records and information in accordance with NPR 1441.1, NASA Records Retention Schedules.

(2) Distributing final report to parties identified in the project plan.

(3) Documenting lessons learned in accordance with NPR 7120.6, Lessons Learned Process.

(4) De-obligating funds.

Appendix A. Definitions

Activity--An operation that sustains NASA as an organization. Unlike projects, which are temporary and unique, activities are ongoing and repetitive (e.g., Environmental Functional Reviews (EFR), day-to-day management, and other program support tasks).

Analysis of Alternatives--A formal analysis method that compares alternatives by estimating their ability to satisfy mission requirements through an effectiveness analysis and by estimating their life-cycle costs through a cost analysis. The results of these two analyses are used together to produce a cost-effectiveness comparison that allows decision makers to assess cost and effectiveness simultaneously. An analysis of alternatives broadly examines multiple elements of program/project alternatives (including technical performance, risk, life-cycle costs, and programmatic aspects) and is typically an important part of formulation studies. The terms, trade studies, trades, and tradeoff analyses are often used in lieu of analysis of alternatives, when the scope of the analysis is more limited.

Approval--An acknowledgement by the responsible official that the program/project, or a phase of a project, has met expectations and formulation requirements; and that proposed personnel assignments, cost estimates, transfers of funds are acceptable, or other actions are acceptable.

Capital Compliance Projects--An ECFL project that is Center-initiated to support the Agency's sustainability efforts or for necessary facility improvements in response to new or changing environmental regulatory requirements (e.g., boiler retrofits, generators, diesel equipment, or wastewater treatment systems required to meet revised regulatory standards).

CERCLA Cleanups--An ECR Restoration Project related to corrective actions in response to releases or threatened releases of hazardous substances, pollutants, or contaminants regulated under CERCLA.

Closure--A Restoration Project life-cycle phase. During this phase, the operations have ceased and post-closure surveillance, long-term monitoring, or maintenance of a shutdown facility ends. Additionally, decommissioning of infrastructure occurs, along with restoration of property.

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)--Commonly known as Superfund, the Act was enacted by Congress on December 11, 1980 (42 U.S.C., Sections 9601-9675). This law provides Federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment.

Compliance Agreements--A category of legal decrees that include, but are not limited to, Federal Facility Agreements, Interagency Agreements, settlement agreements, consent orders, and compliance orders and changes to these orders such as a Record of Decision or a Statement of Basis. They do not include Federal and state environmental requirements not implemented by compliance agreements, such as cleanup work required under certain RCRA permits that authorize waste treatment operations.

Compliance--Conforming to a legal, policy, or procedural requirement.

Component Facilities--Complexes that are geographically separated from the NASA Center or institution to which they are assigned.

Concurrence--The process of reviewing and providing agreement to a document, product, or service within an individual's span of responsibility.

Consent Order (Administrative Order On Consent)--A legal agreement signed by a regulating agency and an individual, business, or other entity through which the violator agrees to pay for correction of violations, take the required corrective or cleanup actions, or refrain from an activity. It describes the actions to be taken, may be subject to a comment period, applies to civil actions, and can be enforced in court.

Contract--A mutually binding legal relationship obligating the seller to furnish the supplies or services (including construction) and the buyer to pay for them. In addition to bilateral instruments, contracts include, but are not limited to: awards and notices of awards; job orders or task letters initiated under basic ordering agreements; letter contracts; orders, such as purchase orders under which the contract becomes effective by written acceptance or performance; and bilateral contract modifications.

Decision Authority--The individual responsible for evaluating program or project recommendations, assessing program and project deliverables, and making the decision that authorizes a program or project to transition to the next life-cycle phase.

Design--A Restoration Project life-cycle phase. During this phase, remedial design plans and specifications, and an engineering cost analysis are completed.

ECR Project--Represents a specific investment with defined requirements, a beginning, life-cycle phases and costs, and an end. The phased approach to defining and implementing projects allows the EMD and Project Managers to better plan projects prior to making funding requests and to assess progress during project execution. An ECR project has a defined management structure, as described in Chapters 4 and 5. ECR projects interface with other projects and agencies as established in its project plan.

ECR Program--A strategic investment by the Office of Strategic Infrastructure that has a defined technical approach, requirements, funding level, and a management structure that initiates and directs one or more projects. The ECR Program defines a strategic direction that NASA has identified as being needed to implement Agency goals and objectives for environmental compliance, restoration, and management.

ECFL Study--An ECR project initiated at a Center/Component Facility that has a potential benefit of addressing Agency risks, realizing opportunities (e.g., identifying environmental or energy performance improvements), leveraging external resources, or establishing external partnerships. ECFL studies include review of changes in applicable legal and other requirements and regulations to determine applicability to Centers and Component Facilities; development of strategies for implementing new regulatory requirements; and analysis of specific problems to determine a course of action.

End of Design Life--Refers to the time period that would allow a reasonable economic return on investment, after which, the unit would be expected to meet performance specifications of the day or be shut down.

Engineering Evaluation Cost Analysis--Analysis of the factors contributing to the costs of operating a remediation system and of the costs which will result from alternative procedures.

Environmental Functional Review--Analysis of a Center's compliance with environmental laws,

regulations, policies, including management structures and systems in place, to ensure that environmental risks are identified and mitigated.

Environmental Management Panel--A panel that advises the Environmental Management Division on the research and implementation of ECR-funded environmental programs, issues, and initiatives.

External Agreement--An agreement with a party outside of NASA that results in the obligation of ECR funds (e.g., Consent Orders, Compliance Agreements, PRP Agreements).

Headquarters Initiative--Agency-wide ECR projects and activities initiated and managed by EMD.

Implementation--The execution of approved plans for the development and operation of programs and projects and the establishment of control systems to ensure performance to plan and align with current Agency strategies.

Interim Action--An action to quickly address a threat associated with a site. The action is generally not the final remedy for the site and may occur at any time throughout the life cycle of the project.

Investigation, Studies, and Analysis of Alternatives--A Restoration Project life-cycle phase. During this phase, investigation activities are completed to determine the nature and extent of contamination. Additionally, feasibility studies are completed for remedial actions including applicable risk assessments; assessing the treatability of the contamination; and evaluating the performance and cost of potential treatment technologies, e.g., CERCLA Remedial Investigation/Feasibility Study (RI/FS) or RCRA Facility Investigation/Corrective Measures Study (RFI/CMS), resulting in an analysis of alternatives for remedial actions.

Investment--Resources, usually funding, along with a decision on how to apply those resources that result in a capability, product, or service that helps NASA achieve its mission. Generally, the benefits of an investment exceed the cost.

Lessons Learned--The significant knowledge or understanding gained through past or current programs and projects that is documented and collected to benefit current and future programs and projects.

Life-Cycle Cost--The total of the direct, indirect, recurring, nonrecurring, and other related expenses incurred, or estimated to be incurred, in the design, development, verification, production, operation, maintenance, support, and decommissioning of a project. Life-cycle cost of a project or system can also be defined as the total cost of ownership over the project's or system's life cycle from formulation through implementation. It includes all design, development, deployment, operation and maintenance, and disposal costs.

Metric--A measurement taken over a period of time that communicates vital information about a process or activity. A metric should drive appropriate action.

NASA Environmental Tracking System (NETS)--An automated system that Centers, Component Facilities, and EMD use to facilitate the planning, budgeting, spending, and approval of ECR projects.

Non-Time-Critical Removal Actions--An interim action under CERCLA that has a planning period of at least six months before on-site activities must be initiated.

NRC Decommissioning--An ECR Restoration Project related to the decontamination and decommissioning of nuclear facilities, with the ultimate goal of license termination.

Operations, Maintenance, and Monitoring--A Restoration Project life-cycle phase. During this phase, operations, maintenance, and monitoring activities for the selected remedial action are completed. This phase ends when clean-up goals are met.

Planning, Programming, Budgeting and Execution--An Agency-wide methodology for aligning resources in a comprehensive, disciplined, top-down approach that supports the Agency's vision and mission. It is designed to take an analytical approach to decision making and focuses on translating strategy into actionable programs and bringing together Agency priorities and strategic outcomes within the Agency's resource constraints. There are four phases in PPBE. The planning phase includes analyzing internal and external conditions, trends, threats, and technologies; examining alternative strategies; and defining long-term strategic goals, multiyear outcomes, and short-term performance goals. The programming phase encompasses definition and analysis of programs and projects, together with their multiyear resource implications and the evaluation of possible alternatives. The budgeting phase includes formulation and justification of the budget to OMB and Congress. The execution phase is the process by which financial resources are made available to Agency components and managed to achieve the purposes and objectives for which the budget was approved.

Potentially Responsible Party--A private organization, individual, public agency, or other legal entity that may be liable for the costs of investigating and cleaning up contamination under the jurisdiction of CERCLA.

PRP Agreement--An agreement pursuant to CERCLA, signed by NASA and a PRP, whereby the PRP agrees to perform and/or pay for some or all of the response costs involved in a site cleanup.

Project Identification and Preliminary Assessment--A Restoration Project life-cycle phase. During this phase, restoration projects are identified that may require ECR Program funds. Activities of this phase are focused on developing information about the need for remediation, responsible parties, and priority of projects.

Principal Center--Center designated by an MOA to provide support to Headquarters in performing Agency-wide tasks.

Principal Center Initiatives--Ongoing Agency-wide activities and projects that are initiated by EMD and implemented by Centers. Principal Center Initiatives require a formal MOA between the implementing Center and OSI and development of annual task plans.

Project Plan--The document that establishes the baseline for project implementation, signed by the ECR Program Manager, Center Director (if appropriate), and Project Manager.

RCRA Cleanup--An ECR Restoration Project related to investigating and, as necessary, remediating hazardous waste releases at or from facilities in accordance with RCRA, regardless of when the releases occurred.

Remedial Action--A Restoration Project life-cycle phase. During this phase, the designed remedy is implemented.

Resource Conservation and Recovery Act--A commonly used designation for the Solid Waste Disposal provisions found at Title 42 U.S.C. §§ 6901 - 6992k.

Restoration--Measures taken to return a site to pre-existing conditions or to otherwise appropriately address or respond to environmental contamination, in accordance with applicable legal and other

requirements.

Risk--The combination of the likelihood that a program or project will experience an undesired event (some examples include a human health or environmental impact, cost overrun, schedule slippage, malicious activities, or failure to achieve project success criteria) and the consequences, impact, or severity of the undesired event, were it to occur. Both the likelihood and consequences may have associated uncertainties.

Risk Assessment--An evaluation of an event that determines: (1) What can go wrong; (2) The likelihood of occurrence; and (3) The potential consequences. A risk assessment may also evaluate the potential human health and ecological impacts associated with a restoration project.

Risk Management--An organized, systematic decision-making process that identifies, analyzes, plans, tracks, and controls, communicates, and documents risk to increase the likelihood of achieving program/project goals.

Safety--Freedom from those conditions that can cause death, injury, occupational illness, damage to or loss of equipment or property, or damage to the environment.

Stakeholder--An individual or organization having an interest in the conduct, outcome, or deliverable of a program or project.

State-Regulated Cleanups--An ECR Restoration Project related to corrective actions in response to releases or threatened releases of hazardous wastes, hazardous substances, pollutants, or contaminants regulated under state laws.

Third-Party Damages--Monetary compensation that is awarded by a court in a civil action to an individual who has been injured through the conduct of another party. Damages attempt to measure in financial terms the extent of harm a plaintiff has suffered because of a defendant's actions.

Time-Critical Emergency Interim Actions--An interim clean-up action that must be conducted immediately to address an imminent threat.

TSCA Cleanup--An ECR Restoration Project related to corrective actions in response to releases to the environment of polychlorinated biphenyls, asbestos, or lead-based paint not resulting from an ongoing NASA construction project.

Underground Storage Tank (UST) investigation and removal--An ECR Restoration Project related to investigations and corrective actions in response to the release of petroleum substances from a UST system.

Verification--Proof of compliance with specifications-- may be determined by a combination of test, analysis, demonstration, and inspection.

Appendix B. Acronyms

CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
C.F.R.	Code of Federal Regulations
ECFL	Environmental Compliance/Functional Leadership
ECR	Environmental Compliance and Restoration
EFR	Environmental Functional Review
EMD	Environmental Management Division
JPL	Jet Propulsion Laboratory (a Federally Funded Research and Development Center)
MOA	Memorandum of Agreement
NETS	NASA Environmental Tracking System
NPD	NASA Policy Directive
NRC	Nuclear Regulatory Commission
NPR	NASA Procedural Requirements
OCFO	Office of the Chief Financial Officer
OCHMO	Office of the Chief Health and Medical Officer
OSI	Office of Strategic Infrastructure
OSMA	Office of Safety and Mission Assurance
PCB	Polychlorinated biphenyls
PPBE	Planning, Programming, Budgeting, and Execution
PRP	Potentially Responsible Party
RCRA	Resource Conservation and Recovery Act
RI/FS	Remedial Investigation/Feasibility Study
TSCA	Toxic Substance Control Act
U.S.C.	United States Code
UST	Underground Storage Tank